

## ABSTRACT OF THE DISCLOSURE

5 A method is provided for the preparation of nanoscale particle arrays having  
highly uniform crystals of metal, semiconductor or insulator materials grown in  
nanopores in the surface of a substrate, wherein the method uses pulse-reverse  
electrodeposition of metals with a rectangular or square waveform in order to generate  
high homogeneity of crystals and high in-plane or out-of-plane anisotropy in a  
controlled manner, enabling the creation of a variety of devices, including but not  
10 limited to high density storage media.

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